



**Europäisches
Patentamt**

**European
Patent Office**

**Office européen
des brevets**

Bescheinigung

Certificate

Attestation

Die angehefteten Unterlagen stimmen mit der ursprünglich eingereichten Fassung der auf dem nächsten Blatt bezeichneten europäischen Patentanmeldung überein.

The attached documents are exact copies of the European patent application described on the following page, as originally filed.

Les documents fixés à cette attestation sont conformes à la version initialement déposée de la demande de brevet européen spécifiée à la page suivante.

Patentanmeldung Nr. Patent application No. Demande de brevet n°

03076938.4

Der Präsident des Europäischen Patentamts;
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets
p.o.

R C van Dijk



Anmeldung Nr:
Application no.: 03076938.4
Demande no:

Anmeldetag:
Date of filing: 06.06.03
Date de dépôt:

Anmelder/Applicant(s)/Demandeur(s):

Sony Ericsson Mobile Communications AB

221 88 Lund
SUEDE

Bezeichnung der Erfindung/Title of the invention/Titre de l'invention:
(Falls die Bezeichnung der Erfindung nicht angegeben ist, siehe Beschreibung.
If no title is shown please refer to the description.
Si aucun titre n'est indiqué se référer à la description.)

Wind noise reduction in directional microphone

In Anspruch genommene Priorität(en) / Priority(ies) claimed / Priorité(s)
revendiquée(s)

Staat/Tag/Aktenzeichen/State/Date/File no./Pays/Date/Numéro de dépôt:

Internationale Patentklassifikation/International Patent Classification/
Classification internationale des brevets:

H04R/

Am Anmeldetag benannte Vertragsstaaten/Contracting states designated at date of
filing/Etats contractants désignées lors du dépôt:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL
PT RO SE SI SK TR LI


Sony Ericsson

2 (4)

Prepared (also subject responsible if other)

SEM/BND/KPE Gerjo Sampimon

Approved

ApprovedBy

Checked

Checked

Confidential

PATENT APPLICATION

No.

DocNo & LangCode

Date

Rev

Reference

TodaysDate

Revision

File

1

Name of invention

Wind noise reduction for miniature directional microphones

2

Inventor(s)

SEM/BND/ER Gerrit Johannes Willem Sampimon
Consultant: David Anderson

3

Background

Microphones for mobile equipment and wind noise.

4

State-of-the-art

Currently all directional microphones are banned from use in handheld equipment and headset because of wind noise. A none directional microphone with or without noise canceling algorithm is used because of less sensitivity for wind noise. (power consuming)

5

Problem

Small portable device such as handheld equipment and headsets for telephony, which use directional microphone to increase their signal to ambient ratio, are highly sensitive to wind noise. To be able to use their advantage this wind noise sensitivity needs to be reduced.

Due to power consumption noise cancel algorithms are not used in small battery powered telephony headsets

6

Solution

The directional microphone is placed in one chamber; this chamber contains large holes and is covered with a fine nylon or metal mesh. In the drawing below a section cut of the solution is given.



Sony Ericsson

3 (4)

Prepared (also subject responsible if other)

SEM/BND/KPE Gerjo Sampimon

Approved

ApprovedBy

Confidential
PATENT APPLICATION

DocNo & LangCode

Date

Today'sDate

Rev

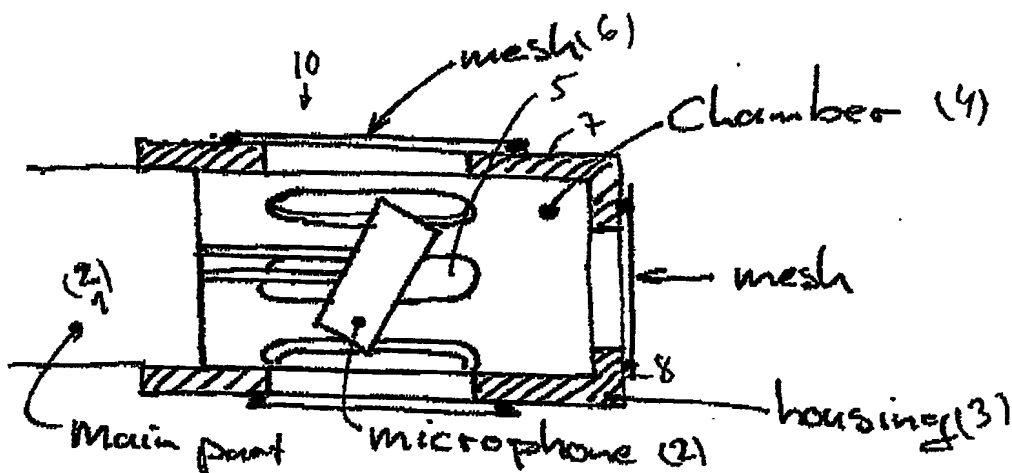
Revision

Reference

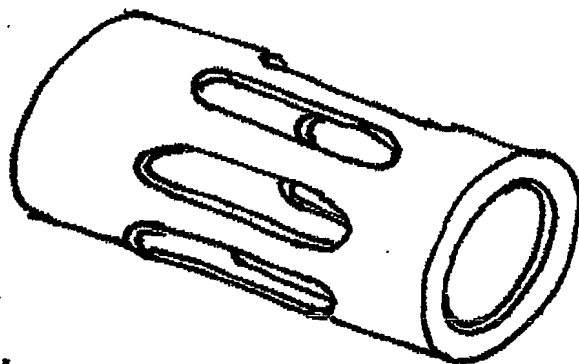
File

Checked

Checked



The housing has a number of relative large holes in all directions (see picture below).



housing with holes

The density (airflow) of this mesh and the number of layers together with the size of the chamber determines the amount of wind noise reduction; the ratio between chamber size and density of the mesh allows the microphone to stay directional.


Sony Ericsson

4 (4)

Prepared (also subject responsible if after)

SEM/BND/KPE Gerjo Sampimon

Approved

ApprovedBy

Checked

Checked

Confidential

PATENT APPLICATION

No.

DocNo & LangCode

Date

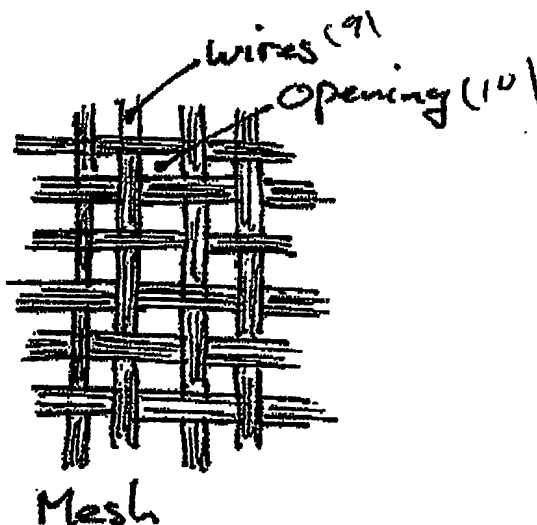
TodaysDate

Rev

Revision

Reference

File



7

Merits of Invention

This solution can be made relatively small, 2~3 times the size of the miniature microphone capsule. The reduction can vary from 15~30 dB depending on the amount of directionality that must be maintained. More reduction is less directionality.

8

Enclosures

Search in EPS on [microphone and "wind noise"] did not show a similar solution

9

Claims Proposal

Small solution for wind noise reduction with directionality of microphone. No electronics or software needed.

Claims

1. Directional microphone (10) for mobile equipment, comprising a microphone pick up (2) located within a microphone pick up housing (3) forming a chamber (4) having a size, said housing (3) being provided with at least one sound passage opening (5) for receiving sound from a sound field external to said chamber (4), characterised in that said at least one sound passage opening (5) is provided with at least one wind noise reduction element (6).
2. Directional microphone (10) according to claim 1, wherein said wind noise reduction element (6) comprises a mesh having one layer.
3. Directional microphone (10) according to claim 1, wherein said wind noise reduction element comprises a mesh having a plurality of layers.
4. Directional microphone (10) according to any one of the claims 2-3, wherein the ratio between the chamber size and the density of the mesh is arranged to provide a directional microphone.
5. Directional microphone (10) according to any one of the previous claims, wherein the mesh is made of metal.
6. Directional microphone (10) according to any one of the previous claims, wherein the mesh is made of polymer material such as nylon.
7. Directional microphone (10) according to any one of the previous claims, wherein said housing (3) extending in a longitudinally direction is a cylinder having a mantle surface (7) and a side surface (8).
8. Directional microphone (10) according to claim 7, wherein said sound passage opening is a hole extending in the longitudinally direction in said mantle surface (7).
9. Directional microphone (10) according to claim 7 or 8, wherein said sound passage opening is a hole in said side surface (8).

10. Directional microphone (10) according to any of the previous claims, wherein said mesh comprises wires (9) with openings (10).
11. Directional microphone (10) according to claim 1, wherein said wind noise reduction element (6) is made of textile fabric.
12. Directional microphone (10) according to claim 1, wherein said wind noise reduction (6) element is made of foamed plastic material.

Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/EP04/005605

International filing date: 25 May 2004 (25.05.2004)

Document type: Certified copy of priority document

Document details: Country/Office: EP
Number: 03076938.4
Filing date: 06 June 2003 (06.06.2003)

Date of receipt at the International Bureau: 07 February 2005 (07.02.2005)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)



World Intellectual Property Organization (WIPO) - Geneva, Switzerland
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse